

**REMARKS/ARGUMENTS**

After the foregoing amendments, claims 1-4, 6-15 and 17-25 are currently pending in this application. Claims 5, 16 and 26 have been canceled without prejudice. Claims 1, 12 and 22 have been amended to incorporate subject matter similar to that previously included in canceled claims 5, 16 and 26, respectively, which the Applicants believe is allowable over the prior art of record. Furthermore, the claims have been amended to more distinctly claim subject matter which the Applicants regard as the invention. The specification of the application has been amended to correct a typographical error in the paragraph beginning on line 33 of page 3 and to more clearly define the variable "p", as recited in claim 7. The Applicants submit that no new matter has been introduced into the application by these amendments.

**Rejection of dependent claims 5, 16 and 26 under 35 U.S.C. 103(a)**

The Examiner rejected claims 5, 16 and 26 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. US 2004/0013212 A1 (Benesty et al.) in view of U.S. Patent No. 6,377,631 (Raleigh). Benesty discloses a method and apparatus for receiving digital wireless transmissions using multiple-antenna communication schemes. Raleigh discloses a transmitter incorporating spatio-temporal processing. On page 6 of the Office Action mailed on November 1, 2005, the Examiner asserts that Benesty discloses processing a vector  $s$  with a transmit matrix  $H$  on page 3, paragraphs 0026-0027. The portion of Benesty cited by the Examiner is presented below:

[0026] *The transmitted vector  $s(k)$  has a total power  $P$ . This power is advantageously held constant regardless of the number of transmitting antennas  $M$  and corresponds to the trace of the covariance matrix of the transmitted vector:*

$$P T = \text{tr}[R_{ss}] = \text{Constant} = m = 1 M s m 2 . (3)$$

[0027] *It will be assumed herein that all of the antennas transmit with the same power,*

$$\sigma_{s,1}^2 = \sigma_{s,2}^2 = K, \text{ and } \sigma_{s,M}^2 = \sigma_{s,2}^2,$$

The Applicants submit that the above portion of Benesty does not disclose processing a vector  $\mathbf{s}$  with a transmit matrix  $\mathbf{H}$  representing  $L$  signals  $[s_1 \dots s_L]$ . The Examiner cites other portions of Benesty that are irrelevant to the features previously claimed in dependent claims 5, 16 and 26. Clearly, Benesty fails to teach or suggest that the transmit matrix  $\mathbf{A}$  is computed to maximize capacity of a channel by multiplying the vector  $\mathbf{s}$  with the transmit matrix  $\mathbf{A}$ , wherein the transmit matrix  $\mathbf{A}$  is equal to  $\mathbf{V}\mathbf{D}$ , where  $\mathbf{V}$  is an eigenvector matrix for  $\mathbf{H}^H\mathbf{H}$ ,  $\mathbf{H}$  is the channel response from the first device to the second device,  $\mathbf{D} = \text{diag}(d_1, \dots, d_L)$  and  $|d_p|^2$  is the transmit power for  $p = 1$  to  $L$ .

The Examiner concedes that Benesty fails to disclose an eigenvector matrix  $\mathbf{H}^H\mathbf{H}$  and asserts that Raleigh teaches such a feature. The Applicants submit that neither of Benesty or Raleigh, alone or in combination, teach or suggest the above-underlined limitations.

The independent claims 1, 12 and 22 have been amended to incorporate the above-underlined limitations. In view of the arguments presented above, the Applicants submit that claims 1, 12, 22 and their dependent claims 2-4, 6-11, 13-15, 17-21 and 23-25 are patentable over the prior art of record.

### **Conclusion**

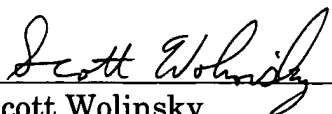
If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephone interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

**Applicant:** Sugar et al.  
**Application No.:** 10/627,537

In view of the foregoing amendment and remarks, the Applicants respectfully submit that the present application, including claims 1-4, 6-15 and 17-25, is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

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SW/bbf/yil  
Enclosure